Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for applying an electrical current through a fluid containing cavity, comprising:

providing a fluid containing cavity;

contacting at least first and second electrodes with the fluid in the fluid containing cavity, the first electrode having a relevant surface area in contact with the fluid in the fluid containing cavity and the second electrode having a second relevant surface area in contact with the fluid in the fluid containing cavity;

applying an alternating ~~current~~ voltage of greater than about 100 V_{RMS} to the fluid in the fluid containing cavity through the first and second electrodes at a first frequency; and

wherein the first frequency and the relevant surface area is selected to avoid generation of gas bubbles at either of the first and second electrodes.

2. (original) The method of claim 1, wherein the first frequency is greater than 1 KHz.

3. (original) The method of claim 1, wherein the first frequency is greater than 5 KHz.

4. (original) The method of claim 1, wherein the first and second electrodes are patterned on a first surface of the fluid containing cavity and the relevant surface area comprises a first edge of the first electrode that faces the second electrode along a path of the electrical current.

5. (original) The method of claim 4, wherein the first edge of the first electrode is configured to provide substantially uniform current distribution across the first edge.

6. (original) The method of claim 5, wherein the first electrode is disposed in a first portion of the fluid containing cavity that is separated from the second electrode by a second portion of the fluid containing cavity, the first portion being wider than the second portion of the fluid containing cavity.

7. (original) The method of claim 6, wherein the first edge is curved to provide substantially uniform electrical resistance between substantially of the first edge of the first electrode and the second electrode.

8. (original) The method of claim 1, wherein the first and second electrodes are disposed on opposing surfaces of the fluid containing cavity, the relevant surface of the first electrode being disposed in substantially directly facing opposition to the relevant surface of the second electrode.

9. (original) The method of claim 8, wherein the relevant surface area of the first electrode and the relevant surface area of the second electrode are between 2 and 100 μm apart along a path of current flow.

10. (original) The method of claim 9, wherein the relevant surface area of the first electrode and the relevant surface area of the second electrode are between 10 and 50 μm apart along the path of current flow.

11. (original) The method of claim 9, wherein the relevant surface area of the first electrode and the relevant surface area of the second electrode are between 10 and 25 μm apart along the path of current flow.

12. (original) A method for applying electrical current through a fluid filled cavity, comprising:

providing a first fluid filled cavity;

contacting at least first and second electrodes with the fluid in the fluid containing cavity, the first electrode having a first relevant surface area in contact with the fluid at a first electrode/fluid interface, and the second electrode having a second relevant surface area that is in contact with the fluid at a second electrode/fluid interface;

applying an alternating current to the fluid in the fluid containing cavity through the first and second electrodes, at a first frequency; and

wherein the first frequency and the relevant surface area is selected to provide less than 1V of voltage drop across at least one of the first and second electrode/fluid interfaces.

13. (currently amended) A method for applying electrical current through a fluid containing cavity, comprising:

providing a fluid containing cavity;

placing first, second and third electrodes in electrical contact with a fluid in the fluid containing cavity at first, second and third different points, respectively, the second point being disposed between the first point and the third point; and

simultaneously applying a first ~~current~~ voltage between the first electrode and the second electrode and applying a second ~~current~~ voltage between the second electrode and the third electrode wherein each of the first and second voltages are greater than about 100 V_{RMS}.

14. (original) The method of claim 13, wherein voltages applied at each of the first, second and thirds electrodes is maintained below 1000V.

15. (original) The method of claim 13, wherein resistance between the first and second electrodes and between the second and third electrodes is maintained below 100 ohms.

16. (original) The method of claim 13, wherein resistance between the first and second electrodes and between the second and third electrodes is maintained below 75 ohms.

17. (original) The method of claim 13, wherein the first and second electrodes and second and third electrodes are between about 5 μm and 20 mm apart along a path of current flow within the fluid containing cavity.

18. (original) The method of claim 17, wherein the first and second electrodes and second and third electrodes are less than 10 mm apart along a path of current flow within the fluid containing cavity.

19. (original) The method of claim 17, wherein the first and second electrodes and second and third electrodes are less than 5 mm apart along a path of current flow within the fluid containing cavity.

20. (original) The method of claim 13, wherein the first and second currents comprise alternating current.

21. (original) The method of claim 13, wherein at least one of the first, second and third electrodes are in electrical contact with the fluid containing cavity via a fluid filled channel that is in fluid communication with the fluid filled cavity, the at least one of the first, second and third electrodes being disposed in contact with fluid in the fluid filled channel.

22. (currently amended) A system for applying electrical current through a fluid, comprising:

a first fluid filled cavity;

first and second electrodes disposed in electrical contact with a fluid in the fluid filled cavity, the first and second electrodes each having a relevant surface area;

an alternating current source operably coupled to the first and second electrodes and set to provide an alternating ~~current~~ voltage greater than about 100 V_{RMS} between the relevant surface areas of the first and second electrodes through the fluid at a

first frequency that avoids generation of gas bubbles in the fluid at either of the first or second electrodes.

23. (original) The system of claim 22, wherein the alternating current source is set to provide an alternating current at a frequency of greater than 1 KHz.

24. (original) The system of claim 22, wherein the alternating current source is set to provide an alternating current at a frequency of greater than 5 KHz.

25. (original) The system of claim 22, wherein the alternating current source is set to provide an alternating current at a frequency of greater than 10 KHz.

26. (currently amended) A system for applying electrical current through a fluid, comprising:

a first fluid filled cavity;

first, second and third electrodes disposed in electrical contact with fluid in the fluid containing cavity at first, second and third locations along the first fluid filled cavity, respectively, the second electrode being positioned at a location between the first and third electrodes; and

a ~~current~~ voltage source operably coupled to the first, second and third electrodes and set to simultaneously supply a first ~~current~~ voltage between the first and second electrodes and a second ~~current~~ voltage between the second and third electrodes, wherein each of the first and second voltages are greater than about 100 V_{RMS}.

27. (original) The system of claim 26, wherein the first, second and third locations are between about 5 μm and 20 mm apart.

28. (original) The system of claim 27, wherein the first, second and third locations are less than 10 mm apart.

29. (original) The system of claim 27, wherein the first, second and third locations are less than 5 mm apart.

30. (original) The system of claim 26, wherein an electrical resistance between the first and second electrodes along a path of current flow and between the second and third electrodes along a path of current flow is less than 100 ohms.

31. (original) The system of claim 26, wherein an electrical resistance between the first and second electrodes along a path of current flow and between the second and third electrodes along a path of current flow is less than 75 ohms.

32. (original) The system of claim 26, wherein the current source applies voltages at each of the first, second and third electrodes that are less than 1000V.